IN THE CLAIMS:

1. (Currently amended) A method for restoring adjacent airfoil to airfoil throat distance of a coated component, which has been exposed to engine operation, to restore coated dimensions of the component and increase subsequent engine operation efficiency, comprising the sequential steps of:

a) providing an engine run component including a base metal substrate having thereon a thermal barrier coating system, the thermal barrier coating system comprising a bond coat on the base metal substrate and a top ceramic thermal barrier coating, the top ceramic thermal barrier coating having a nominal thickness t; wherein the component including the bond coat thereon before engine operation has a weight, $w_0$, and the component including the bond coat and the top thermal barrier coating thereon before engine operation has a weight, $w_1$;

b) removing completely the thermal barrier coating system, wherein a portion of the base metal substrate also is removed, and determining thickness of the base metal substrate removed, the portion of the base metal substrate removed having a thickness, $\Delta t$; wherein the component has a weight, $w_2$, after removal of the thermal barrier coating and before removal of the bond coat; and the component has a weight, $w_3$, after complete removal of the thermal barrier coating system;

c) applying a $\beta$ phase NiAl overlay coating to the substrate, and determining the difference in thickness, $\Delta x$, between the $\beta$ phase NiAl overlay coating and the bond coat previously removed; wherein after application of the NiAl overlay coating the component is weighed, denoted by $w_4$, to determine a weight margin remaining, wherein a combination of at least two of $w_0$, $w_1$, $w_2$, $w_3$ and $w_4$ is employed to determine amount of removed base metal and calculate a thickness in which to apply a top ceramic thermal barrier coating without incurring a weight penalty;

d) reapplying a top ceramic thermal barrier coating to a nominal thickness of $t+\Delta t-\Delta x$, wherein $\Delta t$ compensates for the portion of base metal substrate removed in b) to restore adjacent airfoil to airfoil throat distance to about the distance preceding the engine run ~~without use of excess coating that must be subsequently removed~~ so that the dimensions of the coated component are restored to about the coated dimensions preceding the engine run to increase subsequent engine operation efficiency without a weight penalty, wherein the

thermal barrier coating of d) is applied at a thickness greater than the thermal barrier coating of a); and weight of the component having the bond coat of c) and the thermal barrier coating of d) thereon is denoted by $w_5$ , wherein $w_5$ is less than $w_1$.

2. (Original) The method of claim 1, wherein the engine run component is a high pressure turbine blade, and coated airfoil contour dimensions of the coated component are restored.

3. (Canceled)

4. (Original) The method of claim 1, wherein t is between about 3 mils and about 10 mils, and $\Delta t$ is at least about 0.5 mil.

5. (Original) The method of claim 1, wherein the bond coat of a) comprises a diffusion aluminide coating.

6. (Original) The method of claim 5, wherein the diffusion aluminide coating is a simple aluminide or a modified aluminide.

7. (Original) The method of claim 1, wherein the base metal substrate is a nickel-based single crystal superalloy.

8. (Original) The method of claim 1, wherein the base metal substrate is a nickel-based directionally solidified superalloy.

9. (Original) The method of claim 5, wherein the diffusion aluminide coating is a modified aluminide coating comprising a metal selected from the group consisting of Pt, Rh and Pd.

10. (Original) The method of claim 5, wherein the diffusion aluminide coating further comprising reactive elements.

11. (Original) The method of claim 1, wherein the ceramic thermal barrier coating comprising yttria stabilized with zirconia.

12. (Original) The method of claim 1, wherein the bond coat of a) comprises a MCrAlY coating.

13. (Original) The method of claim 1, wherein the β NiAl overlay coating comprises a NiAl alloy consisting essentially of nickel and aluminum and containing zirconium.

14. (Original) The method of claim 1, wherein the β NiAl overlay coating is applied to a thickness of about 0.5-2 mils.

15. (Original) The method of claim 13, wherein the alloy comprises at least about 0.2 atomic percent of the zirconium.

16. (Original) The method of claim 1, wherein the β NiAl overlay coating comprises about 2-15 atomic percent chromium and about 0.1-1.2 atomic percent zirconium.

17. (Original) The method of claim 1, wherein the β NiAl overlay coating further comprises reactive elements.

18. (Original) The method of claim 17, wherein the reactive elements are selected from the group consisting of Hf, Zr and Y.

19. (Currently amended) A method for restoring adjacent airfoil to airfoil throat distance of a coated high pressure turbine blade, which has been exposed to engine operation, to restore airfoil contour dimensions of the blade comprising the sequential steps of:

a) providing an engine run high pressure turbine blade including a base metal substrate made of a nickel-based alloy having thereon a thermal barrier coating system, the thermal barrier coating system comprising a diffusion bond coat on the base metal substrate and a top ceramic thermal barrier coating comprising a yttria stabilized zirconia material, the top ceramic thermal barrier coating having a nominal thickness t; wherein the component including the bond coat thereon before engine operation has a weight, $w_0$, and the component including the bond coat and the top thermal barrier coating thereon before engine operation has a weight, $w_1$;

b) removing completely the thermal barrier coating system, wherein a portion of the

base metal substrate also is removed, and determining thickness of the base metal substrate removed, the portion of the base metal substrate removed having a thickness, $\Delta t$; wherein the component has a weight, $w_2$, after removal of the thermal barrier coating and before removal of the bond coat; and the component has a weight, $w_3$, after complete removal of the thermal barrier coating system;

c) applying a $\beta$ phase NiAl overlay coating to the substrate, and determining the difference in thickness, $\Delta x$, between the $\beta$ phase NiAl overlay coating and the previously removed bond coat, wherein after application of the NiAl overlay coating the component is weighed, denoted by $w_4$, to determine a weight margin remaining, wherein a combination of at least two of $w_0$, $w_1$, $w_2$, $w_3$ and $w_4$ is employed to determine amount of removed base metal and calculate a thickness in which to apply a top ceramic thermal barrier coating without incurring a weight penalty;

d) reapplying the top ceramic thermal barrier coating to a nominal thickness of $t+\Delta t-\Delta x$, wherein $\Delta t$ compensates for the portion of base metal substrate removed in b) to restore adjacent airfoil to airfoil throat distance to about the distance preceding the engine run ~~without use of excess coating that must be subsequently removed~~ so that the coated airfoil contour dimensions of the coated blade are restored to about the coated dimensions preceding the engine run without a weight penalty, wherein the thermal barrier coating of d) is applied at a thickness greater than the thermal barrier coating of a); and weight of the component having the bond coat of c) and the thermal barrier coating of d) thereon is denoted by $w_5$, wherein $w_5$ is less than $w_1$.

20. (Original) The method of claim 19, wherein the nickel-based alloy has a density of about 8.64 $g/cm^3$.

21. (Currently Amended) The method of claim 19, wherein the yttria stabilized zirconia material has a density of about 4.7 ~~$g.cm^3$~~ $g/cm^3$.

22. (Original) The method of claim 1, wherein the component is an airfoil.

23. (Original) The method of claim 1, wherein the component is a static component.

24. (Original) The method of claim 23, wherein the static component is a vane.

25. (Currently amended) A method for restoring adjacent airfoil to airfoil throat distance of a coated component, which has been exposed to engine operation, to restore coated airfoil contour dimensions of the component consisting essentially of the sequential steps of:

a) providing an engine run component including a base metal substrate made of a nickel-based alloy having thereon a thermal barrier coating system, the thermal barrier coating system comprising a diffusion bond coat on the base metal substrate and a top ceramic thermal barrier coating comprising a yttria stabilized zirconia material, the top ceramic thermal barrier coating having a nominal thickness t; wherein the component including the bond coat thereon before engine operation has a weight, $w_0$, and the component including the bond coat and the top thermal barrier coating thereon before engine operation has a weight, $w_1$;

b) inspecting the component;

c) removing completely the thermal barrier coating system by stripping, wherein a portion of the base metal substrate also is removed, the portion of the base metal substrate removed having a thickness, $\Delta t$; wherein the component has a weight, $w_2$, after removal of the thermal barrier coating and before removal of the bond coat; and the component has a weight, $w_3$, after complete removal of the thermal barrier coating system;

d) applying a $\beta$ phase NiAl overlay coating to the substrate and determining the difference in thickness $\Delta x$ between the $\beta$ phase NiAl overlay coating and the previously removed bond coat; and weighing the component to calculate $\Delta t$; wherein after application of the NiAl overlay coating the component is weighed, denoted by $w_4$, to determine a weight margin remaining, wherein a combination of at least two of $w_0$, $w_1$, $w_2$, $w_3$ and $w_4$ is employed to determine amount of removed base metal and calculate a thickness in which to apply a top ceramic thermal barrier coating without incurring a weight penalty;

e) reapplying the top ceramic thermal barrier coating to a nominal thickness of $t+\Delta t-\Delta x$, wherein $\Delta t$ compensates for the portion of base metal substrate removed in c) to restore adjacent airfoil to airfoil throat distance to about the distance preceding the engine run ~~without use of excess coating that must be subsequently removed~~ so that the airfoil contour dimensions of the coated component are restored to about the coated dimensions preceding the engine run without a weight penalty, wherein the thermal barrier coating of d) is applied at a thickness greater than the thermal barrier coating of a); and weight of the component having the bond coat of c) and the thermal barrier coating of d) thereon is denoted by $w_5$,

wherein $w_5$ is less than $w_1$.

26. (New) The method of claim 1, wherein $w_2$-$w_3$ is employed to determine weight of the removed base metal; and the base metal thickness loss, $\Delta t$, is determined by: $\Delta t$=(weight of removed base metal)/(stripped area x density of base metal).